STAR Algorithm Integration Team: Configuration Management

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Overview

Configuration Management supports routine algorithms integration work for the STAR Algorithm Integration Team (AIT) by identifying, controlling, maintaining and verifying all relevant versions of Configuration Items (CIs).

STAR AIT brings technical expertise and support to product algorithms, specifically in testing and validating science algorithms in the Algorithm Development Library (ADL) environment. STAR AIT assists JPSS science teams in implementing algorithm changes.

STAR AIT utilizes CM using IBM Rational ClearCase and ClearQuest and adopts ClearCase Unified Change Management (UCM) approach for JPSS related projects. Naming conventions are employed for the configuration identification process of ClearCase Streams, Views and Baselines. Streams are used to enable parallel development in projects. With appropriate branching strategy, developers from both AIT and science teams are able to create private development streams to access projects associated software, data and documentation. For science teams without access to ClearCase, AIT assists to integrate all corresponding algorithms updates into ClearCase and verify the changes. AIT is also responsible for design, development and implementation of the tools associated with tracking CIs and defining the change process.

Configuration Item and Identification

Configuration Items (CIs) are aggregations of data documentation, software and hardware that are designated for configuration management. CIs provide visibility during the lifecycle phases and are supported by the CM system. Items subject to configuration control within JPSS related projects include:

- ADL software
- IDPS Algorithm packages
- Science Teams Delivered Algorithms and Updates
- Acquired software (e.g. COTS)
- LUTs
- AIT Scripts (chain run scripts, CM related scripts, etc.)
- Tools (e.g. compilers, libraries)
- AIT Documents
- JPSS ATBDs

STAR AIT CM has the responsibility for identifying and selecting which elements and components can become CIs. Configuration Identification consist of setting and maintaining baselines that define the CIs at any point in time. Depending on the development lifecycle phase, different baselines are progressively established.

Ongoing Projects

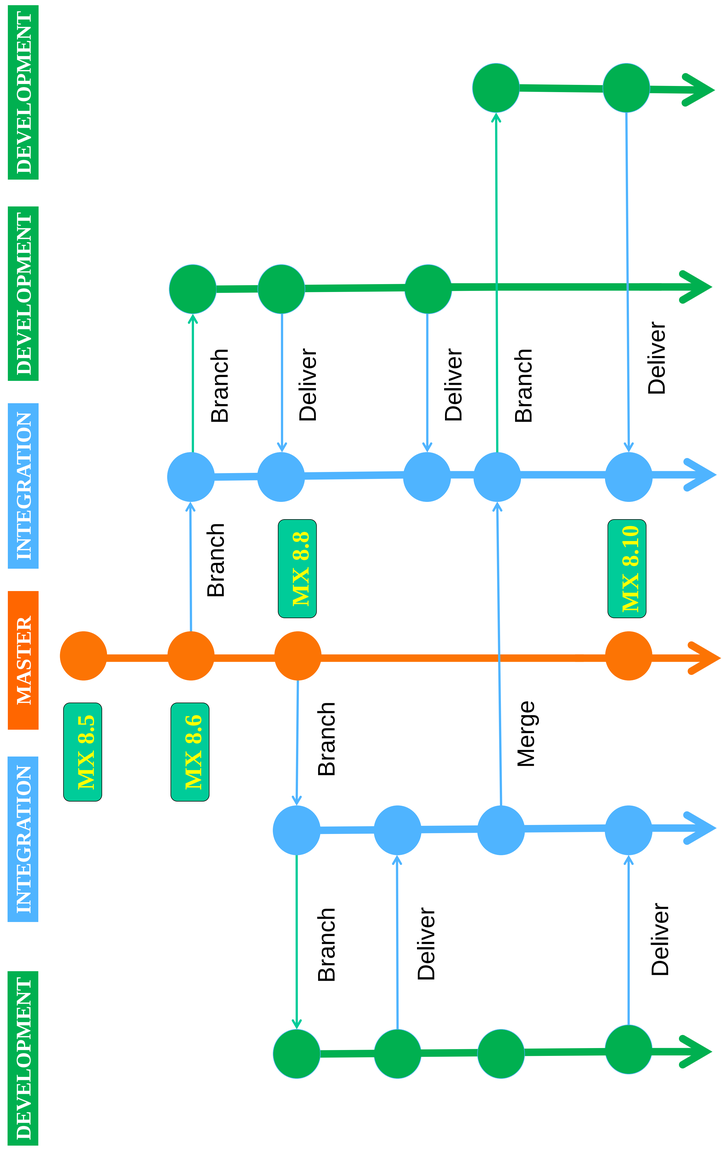
JPSS ADL is created for the code testing and algorithm updates integration/validation within ADL3.x and ADL4.x environments.

JPSS ADL BLK2 is created for the code testing and algorithm updates integration/validation within ADL5.x environments.

NUCAPS is created for the code testing and algorithm updates integration/validation within NOAA Unique CrIS ATMS Processing System (NUCAPS).

JPSS ATBD is created for the CM of transferred JPSS ATBDs and the ATBD updates afterwards.

Branching Strategy for JPSS ADL project



STAR AIT CM defines three different types of branches for project JPSS ADL:

The **MASTER** branch (ADL_MAJOR_INT stream in ClearCase UCM project) is used to reserve the operational code (MX Builds).

The **INTEGRATION** branch (ADL##_MX##_DEV_INT stream) is the integration branch used by developer from AIT or science teams to deliver their changes to or get other developers updates from.

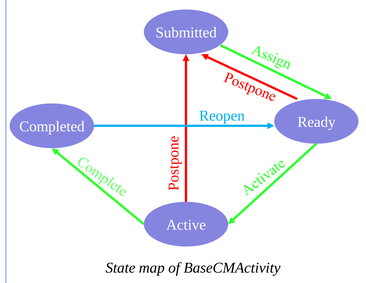
The **DEVELOPMENT** branch is created by developers to implement updates, on which AIT developers can test and validate the algorithm updates.

Configuration Control

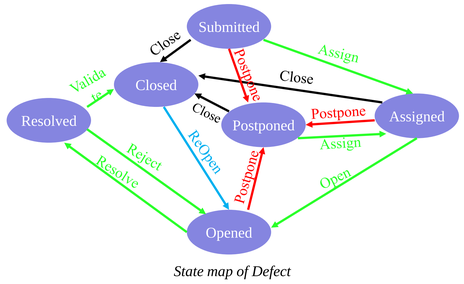
The monitoring of a change request from open to close is performed through the configuration control process. IBM Rational ClearQuest is used to initiate, track and report all STAR AIT change requests. A change request will be entered by generating one of the following forms in ClearQuest.

Development: a form used to propose a configuration change for development or enhancement. The change may be algorithm updates, LUT updates or AIT Scripts updates, etc.

Defect: a form used to record bugs and their resolutions. A defect kind change request can't be closed without the resolution state changed to "Fixed".



State map of BaseCMActivity



State map of Defect

Configuration Status Accounting is enabled to provides visibility into the states of activities and provides traceability for all changes of an evolving CI throughout the system lifecycle.

Configuration Management for JPSS ATBD

With the transition of JPSS ATBD to STAR, AIT CM is responsible to perform the configuration and change control through the ATBD documents development lifecycle after the transfer. All the transferred JPSS ATBDs (both WORD and PDF formats) are selected as CIs and labeled with appropriate baselines to establish revision history and maintain a definitive basis for control and status accounting.

STAR JPSS ATBD Naming Convention:

<Document ID>_<Mission ID>_<Satellite ID>_< Index>_JPSS_ATBD_<Product Name>_<Revision>

Document ID : STAR Document CM ID (distinguish document types)
Mission ID : Mission ID (distinguish different missions such as SNPP, J1, etc.)
Satellite ID : Satellite ID (distinguish different satellites)
Index : ATBD index (unique index for each product)
Product Name : Algorithm name
Revision : ATBD revision ID (distinguish different revision stages)

AIT CM Process

Once the ATBD updates are approved by Algorithm Engineering Review Board (AERB), a formal baseline will be established by STAR JPSS QA. The PDF format of the latest ATBD will be synchronized to the corresponding directory on STAR JPSS web server so the up-to-date content will be available immediately online.

Future Project and Planning

- STAR AIT is making CM plan for JPSS Cal/Val Maturity Documents.